

IN THE CLAIMS

This listing of the claim will replace all prior versions and listings of claim in the present application.

Listing of Claims

1. (previously presented) A storage resource operation managing method in a storage network arranged by a node for transmitting an access request via a network to a storage and by a storage group constituted by at least one storage resource which receives said access request so as to execute a content of the access request, said storage resource operation managing method comprising the steps of:

acquiring at least one of a logical distance and a geographical distance from at least one of said node and said storage resources contained in said storage group, and said storage resources contained in said storage group;

acquiring from said node a requirement range with respect to at least one of said logical distance and said geographical distance; and

selecting at least one storage resource for executing access request issued from said node from said storage group, while at least one of said requirement range with respect to said logical distance and said requirement range with respect to said geographical distance is set as a selecting condition.

2. (previously presented) A storage resource operation managing method as claimed in claim 1, wherein as said storage resource selecting condition,

at least one storage resource is selected which is located within said requirement range of at least one of said logical distance and said geographical distance.

3. (previously presented) A storage resource operation managing method as claimed in claim 2, wherein within at least one storage resource located in said requirement range, at least such one storage resource is selected whose at least one of said logical distance and said geographical distance is closer than those of other storage resources.

4. (previously presented) A storage resource operation managing method as claimed in claim 2, wherein within at least one storage resource located in said requirement range, at least such one storage resource is selected, the geographic distance of which is far from the geographical distance of another storage resource.

5. (previously presented) A storage resource operation managing method in a storage network arranged by a node for transmitting an access request via a network to a storage and by a storage group constituted by at least one storage resource which receives said access request so as to execute a content of the access request, said storage resource operation managing method comprising the steps of:

acquiring at least one of a logical distance and a geographical distance from at least one of said node and said storage resources contained in said storage group, and said storage resources contained in said storage group;

acquiring from said node a requirement range with respect to at least one of said logical distance and said geographical distance; and

selecting at least one storage resource for executing access request issued from said node from said storage group, while at least one of said requirement range with respect to said logical distance and said requirement range with respect to said geographical distance is set as a selecting condition,

wherein in such a case that the storage resource located within said requirement range is not present within said storage group, such a storage resource is selected whose at least one of said logical distance and said geographical distance is closer than those of another storage resource from said storage group.

6. (previously presented) A storage resource operation managing method in a storage network arranged by a node for transmitting an access request via a network to a storage and by a storage group constituted by at least one storage resource which receives said access request so as to execute a content of the access request, said storage resource operation managing method comprising the steps of:

acquiring at least one of a logical distance and a geographical distance from at least one of said node and said storage resources contained in said storage group, and said storage resources contained in said storage group;

acquiring from said node a requirement range with respect to at least one of said logical distance and said geographical distance; and

selecting at least one storage resource for executing access request issued from said node from said storage group, while at least one of said requirement range with respect to said logical distance and said requirement range with respect to said geographical distance is set as a selecting condition,

wherein in such a case that the storage resource located within said requirement range is not present within said storage group, such a storage resource is newly added whose at least one of said logical distance and said geographical distance is located within said requirement range.

7. (previously presented)A storage resource operation managing method as claimed in claim 1, wherein with respect to at least a first storage resource contained in said storage group,

a requirement range with respect to a geographical distance from said first storage resource is acquired;

a second storage resource is selected from said storage group located within the requirement range with respect to said geographical distance from said first storage resource, or a second storage within the requirement range with respect to said geographical distance from said first storage resource;

copied data as to at least a data portion of such data stored in said first storage resource is stored into said second storage resource; and

in the case that an occurrence of a trouble of said first storage resource is detected, the access request issued from said node, which is transmitted to said first storage resource, is executed with respect to said copied data of the data stored in said second storage resource.

8. (previously presented) A storage resource operation managing method as claimed in claim 1, further comprising the steps of:

in such a case that a geographical location of said node is changed from a first setting position to a second setting position judging whether or not a logical distance defined from said node set at the second setting position up to such a storage resource which executes an access request transmitted by said node is located within said requirement range; and

moving data in said storage resource into another storage resource, when the logical distance from said second setting position is located is beyond said requirement range.

9. (previously presented) In a storage network which is arranged by a node for transmitting an access request via a network to a storage, a storage group constituted by at least one storage resource which receives said access request so as to execute a content of the access request, and a management server, said management server comprising:

means for acquiring at least one of a logical distance and a geographical distance from at least one of said node and said storage resources contained in said storage group, and said storage resources contained in said storage group;

means for acquiring from said node a requirement range with respect to at least one of said logical distance and said geographical distance; and

means for selecting at least one storage resource for executing the access request issued from said node from said storage group, while at least one of said requirement range with respect to said logical distance and said requirement range with respect to said geographical distance is set as a selecting condition.

10. (new) In a network system including a plurality of storage resources and at least one of computers being coupled to said storage devices via a network for using data stored in said storage resource, a storage resource managing method comprising the steps of:

acquiring storage resource information including at least one of a logical distance and a geographical distance between at least one of said computers and each of said storage resources;

acquiring an allocation request for assigning storage resource to said computer based on a requirement range with respect to at least one of said logical distance and said geographical distance; and

allocating, to said computer, a storage resource corresponding to said acquired storage resource information and said requirement range included in said allocation request storage resource.

11. (new) A storage resource managing method according to claim 10, wherein the step of allocating comprises the step of:

if the storage resource located within said requirement range is not present, allocating at least one storage resources unsatisfied with said requirement range based that acquired storage resource information.

12. (new) A storage resource managing method according to claim 11, wherein said allocated storage resource to said computer is that the gap between said storage device information of said allocated storage device and said requirement range is smaller than gaps between said other storage device information of storage devices that do not satisfy said requirement range.

13. (new) A storage resource managing method according to claim 11, wherein at least one of said logical distance and said geographical distance of said allocated storage resource is closer than those of said other storage device that does not satisfy said requirement range.

14. (new) A storage resource managing method according to claim 11, wherein at least one of said logical distance and said geographical distance of said allocated storage resource is farther than those of said other storage device that do not satisfy said requirement range.

15. (new) A storage resource managing method according to claim 11, wherein the step of allocating comprises the step of:

if the storage resource located within said requirement range is not present, adding at least one of new storage resources that satisfy said requirement range and allocating at least one of said new storages.

16. (new) A storage resource managing method according to claim 10, further comprising the steps of:

if a geographical location of said computer is changed from a first location to a second location, judging whether or not a logical distance between said computer in said second location and said storage allocated storage resource is within said requirement range;

if said logical distance between said computer is said second location and said allocated storage resource is beyond said requirement range, adding a storage resource that satisfy with said requirement range; and

moving data to said storage device which is added.